K-12 Teachers—Effectiveness by Years of Experience

Program description:
This analysis examines improvements in student test scores at different points in a teacher's career, in comparison with a beginning teacher. The estimate in the table below represents students' average annual test score gains from teachers with one to five years of teaching experience (in comparison to the initial year). The chart below shows how teacher effectiveness changes by years of experience from years 1 through 30. The evidence shows that teacher effectiveness, as measured by changes in student test scores, increases steadily in the first 5 to 10 years and then levels off.

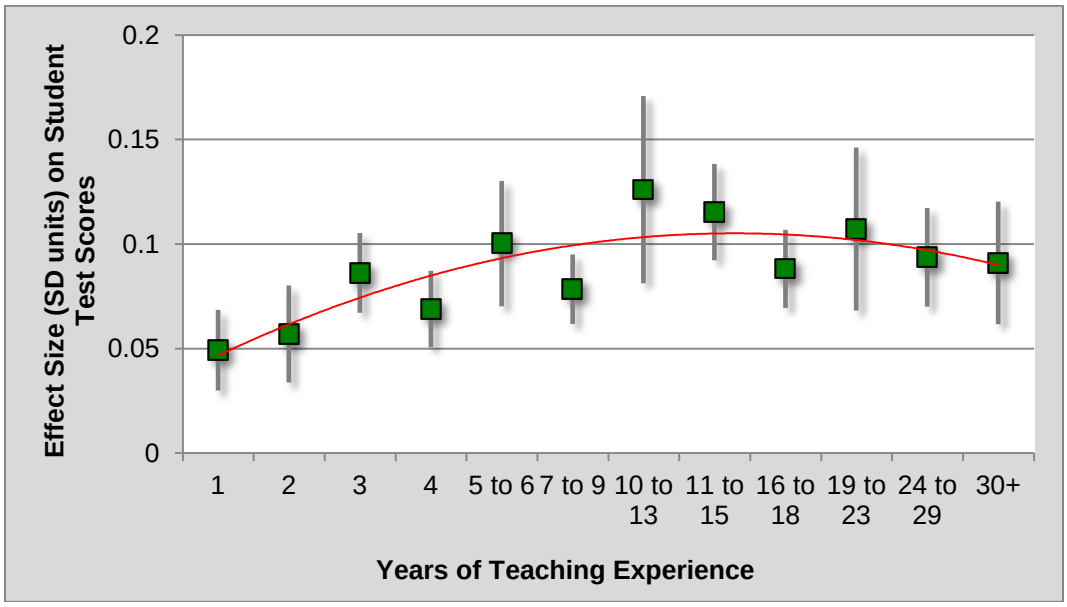
Typical age of primary program participant: N/A

Typical age of secondary program participant: N/A

Meta-Analysis of Program Effects

Outcomes Measured	Primary or Second-ary Partici-pant	No. of Effect Sizes	Unadjusted Effect Sizes (Random Effects Model)			Adjusted Effect Sizes and Standard Errors Used in the Benefit-Cost Analysis					
						First time ES is estimated			Second time ES is estimated		
			ES	SE	p-value	ES	SE	Age	ES	SE	Age
Test scores	P	50	0.06	0.01	0.00	0.06	0.01	13	0.06	0.01	17

Benefits and costs were not estimated.



Multiplicative Adjustments Applied to the Meta-Analysis

Type of Adjustment	Multiplier
1- Less well-implemented comparison group or observational study, with some covariates.	1.00
2- Well-implemented comparison group design, often with many statistical controls.	1.00
3- Well-done observational study with many statistical controls (e.g., instrumental variables).	1.00
4- Random assignment, with some implementation issues.	1.00
5- Well-done random assignment study.	1.00
Program developer = researcher	0.5
Unusual (not "real-world") setting	0.5
Weak measurement used	0.5

Studies Used in the Meta-Analysis

Aaronson, D., Barrow, L., & Sander, W. (2007). Teachers and student achievement in the Chicago public high schools. *Journal of Labor Economics, 25*(1), 95-135.

Akerhielm, K. (1995). Does class size matter? *Economics of Education Review, 14*(3), 229-241.

Archibald, S. (2006). Narrowing in on educational resources that do affect student achievement. *Peabody Journal of Education, 81*(4), 23-42.

Borland, M. V., Howsen, R. M., & Trawick, M. W. (2005). An investigation of the effect of class size on student academic achievement. *Education Economics, 13*(1), 73-83.

Boyd, D., Lankford, H., Loeb, S., Rockoff, J., & Wyckoff, J. (2008). The narrowing gap in New York City teacher qualifications and its implications for student achievement in high-poverty schools. *Journal of Policy Analysis & Management*, 27(4), 793-818.

Brown, B. W., & Saks, D. H. (1975). The production and distribution of cognitive skills within schools. *Journal of Political Economy, 83*(3), 571-593.

Buddin, R., & Zamarro, G. (2009). Teacher qualifications and student achievement in urban elementary schools. *Journal of Urban Economics 66*(2), 103-115.

Chingos, M. M., & Peterson, P. E. (2011). It's easier to pick a good teacher than to train one: Familiar and new results on the correlates of teacher effectiveness. *Economics of Education Review, 30*(3), 449-465.

Clotfelter, C. T., Ladd, H. F., & Vigdor, J. L. (2006). Teacher-student matching and the assessment of teacher effectiveness. *The Journal of Human Resources, 41*(4), 778-820.

Clotfelter, C. T., Ladd, H. F., & Vigdor, J. L. (2007). Teacher credentials and student achievement: Longitudinal analysis with student fixed effects. *Economics of Education Review, 26*(6), 673-682.

Clotfelter, C. T., Ladd, H. F., & Vigdor, J. L. (2010). Teacher credentials and student achievement in high school: A cross-subject analysis with student fixed effects. *Journal of Human Resources, 45*(3), 655-681.

Corcoran, S. P., Jennings, J. L., & Beveridge, A. A. (2011, April). *Teacher effectiveness on high- and low-stakes tests*. Unpublished manuscript, New York University.

Croninger, R. G., Rice, J. K., Rathbun, A., & Nishio, M. (2007). Teacher qualifications and early learning: Effects of certification, degree, and experience on first-grade student achievement. *Economics of Education Review, 26*(3), 312-324.

Goldhaber, D. D., & Brewer, D. J. (1996). Evaluating the effect of teacher degree level on educational performance. In W. J. Fowler, Jr. (Ed.), *Developments in school finance, 1996: Fiscal proceedings from the Annual NCES State Data Conference* (pp. 197-210). Washington, DC: U.S. Department of Education, National Center for Education Statistics.

Goldhaber, D. D., & Brewer, D. J. (1997). Why don't schools and teachers seem to matter? Assessing the impact of unobservables on educational productivity. *The Journal of Human Resources, 32*(3), 505-523.

Goldhaber, D. D., & Brewer, D. J. (2000). Does teacher certification matter? High school teacher certification status and student achievement. *Educational Evaluation and Policy Analysis, 22*(2), 129-145.

Goldhaber, D. D., Brewer, D. J., & Anderson, D. J. (1999). A three-way components analysis of educational productivity. *Education Economics, 7*(3), 199-208.

Goldhaber, D., & Anthony, E. (2007). Can teacher quality be effectively assessed? National board certification as a signal of effective teaching. *The Review of Economics and Statistics, 89*(1), 134-150.

Goldhaber, D., Liddle, S., Theobald, R., & Walch, J. (2010). *Teacher effectiveness and the achievement of Washington's Students in Mathematics* (CEDR Working Paper 2010-06). Bothell: University of Washington Bothell, Center for Education Data & Research.

Hanushek, E. A. (1992). The trade-off between child quantity and quality. *Journal of Political Economy, 100*(1), 84-117.

Harris, D. N., & Sass, T. R. (2011). Teacher training, teacher quality and student achievement. *Journal of Public Economics, 95*(7-8), 798-812.

Hill, H. C., Rowan, B., & Ball, D. L. (2005). Effects of teachers' mathematical knowledge for teaching on student achievement. *American Educational Research Journal, 42*(2), 371-406.

Huang, F. L., & Moon, T. R. (2009). Is experience the best teacher? A multilevel analysis of teacher characteristics and student achievement in low performing schools. *Educational Assessment, Evaluation and Accountability, 21*(3), 209-234.

Jacob, B. A., & Lefgren, L. (2008). Can principals identify effective teachers? Evidence on subjective performance evaluation in education. *Journal of Labor Economics, 26*(1), 101-136.

Jepsen, C., & Rivkin, S. (2002). *Class size reduction, teacher quality, and academic achievement in California public elementary schools*. San Francisco: Public Policy Institute of California.

Kane, T. J., Rockoff, J. E., & Staiger, D. O. (2008). What does certification tell us about teacher effectiveness? Evidence from New York City. *Economics of Education Review, 27*(6), 615-631.

Koedel, C., & Betts, J. R. (2007, April). *Re-examining the role of teacher quality in the educational production function*. Unpublished manuscript, University of Missouri-Columbia, Department of Economics.

Krieg, J. M. (2006). Teacher quality and attrition. *Economics of Education Review, 25*(1), 13-27.

Krueger, A. B. (1999). Experimental estimates of education production functions. *The Quarterly Journal of Economics, 114*(2), 497-532.

Kukla-Acevedo, S. (2009). Do teacher characteristics matter? New results on the effects of teacher preparation on student achievement. *Economics of Education Review, 28*(1), 49-57.

Ladd, H. F., Sass, T. R., & Harris, D. N. (2007, February). *The impact of national board certified teachers on student achievement in Florida and North Carolina: A summary of the evidence prepared for the National Academies Committee on the evaluation of the impact of teacher certification by NBPTS*. Unpublished manuscript.

Leak, J. A., & Farkas, G. (2011). *Effects of teacher credentials, coursework, and certification on student achievement in math and reading in kindergarten: An ECLS-K study*. Evanston, IL: Society for Research on Educational Effectiveness.

Leigh, A. K. (2010). Estimating teacher effectiveness from two-year changes in students' test scores. *Economics of Education Review, 29*(3), 480-488.

Ost, B. (2009, November). *How do teachers improve? The relative importance of specific and general human capital*. Unpublished manuscript, Cornell University, Ithaca, NY.

Studies Used in the Meta-Analysis

Pil, F. K., & Leana, C. (2009). Applying organizational research to public school reform: The effects of teacher human and social capital on student performance. *Academy of Management Journal, 52*(6), 1101-1124.

Rockoff, J. E. (2004). The impact of individual teachers on student achievement: Evidence from panel data. *The American Economic Review, 94*(2), 247-252.

Subedi, B. R., Swan, B., & Hynes, M. C. (2011). Are school factors important for measuring teacher effectiveness? A multilevel technique to predict student gains through a value-added approach. *Education Research International, 2011*. doi: 10.1155/2011/532737

Xu, Z., Hannaway, J., & Taylor, C. (2009, March). *Making a difference? The effects of Teach for America in high school* (Working Paper 17. Revised). Washington, DC: The Urban Institute, National Center for Analysis of Longitudinal Data in Education Research.